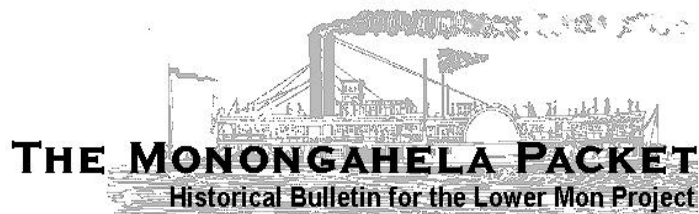




US Army Corps
of Engineers
Pittsburgh District



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The Lower Mon Project and You

Welcome to the latest news on our Lower Mon Project. As we proceed into this New Millennium, our project to update navigation facilities on the Lower Monongahela River is well into construction. Our innovative, in-the-wet, Braddock Dam construction is under way with foundation preparations at the Locks 2, Braddock site and the floatable dam segment assembly at the Leetsdale Industrial Park casting basin. As the 21st century advances so does the pace of construction on our project to update the Lower Monongahela Navigation Facilities.

Cultural Resource Studies Update

This is the sixth bulletin in our series published to describe historical studies undertaken as part of the District's compliance activities for our 'Lower Mon Project'. 'The Lower Mon Project' refers to our plans to modernize Locks and Dams 2, 3, and 4 on the Monongahela River in Allegheny, Washington and Westmoreland, counties in southwestern Pennsylvania. The project more specifically involves the replacement of Dam 2 and Locks 4 along with the removal of Locks and Dam 3.

Navigation structures, such as locks and dams, are necessary to make inland waterways viable, year-round transportation corridors. Locks and Dams 2, 3, and 4 are the three oldest, currently operating navigation facilities on the Mon River. They were constructed in 1904-5, 1905-7, and 1931-2, respectively. Locks at these three locations experience the highest volume of commercial traffic on the Monongahela River Navigation System. The pools impounded by these dams are also popular with recreational boaters.

This newsletter presents for your information the results of recent studies undertaken as part of our activities in compliance with Section 106 of the National Historic Preservation Act. Pass it on to others with interest. We welcome comments and feedback.



Steamers at Monongahela River Boatyards shown in undated photograph

Historical Essays Highlight Role of Navigation Improvements to the Development of the Mon Valley

As part of our continuing studies on the Monongahela River Navigation Improvements, we contracted with historians from Heberling Associates to research several historic themes and compose essays placing the Monongahela River Navigation Improvements into historical perspective. The four research themes covered to date examine the role of navigation improvements in relationship to the following themes: the western movement (by Dr. Judy Heberling); boat building (by Dr. John Kudlick); community development (by Dr. Ronald C. Carlisle); and the coal, coke, iron, and steel industries of the Monongahela River Valley (Dr. Carlisle).

The results of their research produced several interesting facts:

- The Mon River was officially designated as a State Public Highway in 1782. Large volumes of traffic moved west across the Appalachians and down the Monongahela and Ohio Rivers during the peak years of westward expansion (1795 to 1830) in spite of unimproved conditions. By the time the privately run Monongahela River Navigation Company began to build locks and dams on the Mon River in the early 1840s, the main period of the Western Movement (settlement

of the country west of the Ohio River) had diminished.

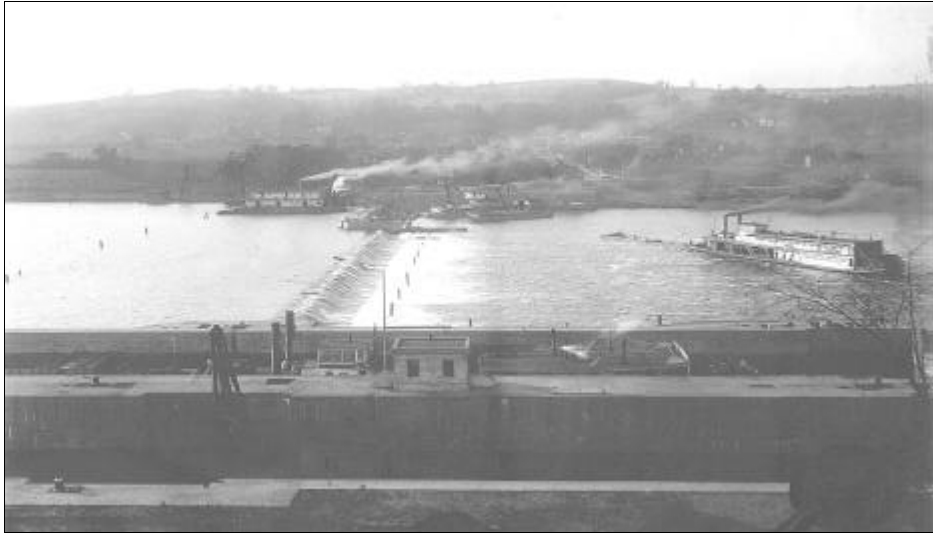
- During the 1800s the Mon River served as a vital transportation link, connecting the communities of the Mon Valley to each other and to their regional market center in Pittsburgh. This river, whose flow sometimes nearly dried up, moved local products to market, such as lumber, glassware, pottery, fresh produce, and coal, and to returned items from markets in larger centers, such as Pittsburgh.
- By 1807, traffic on the Monongahela River was so heavy that milldam owners were required to keep a lamp at the head of each chute to guide flatboat men through at night.
- The second steamboat using Robert Fulton's designs and financial backing was built in Pittsburgh's boatyards and traveled one way down the Ohio to New Orleans in 1811. Daniel French built the first steamboat on the Monongahela at Brownsville and Henry Shreve piloted it to New Orleans and back in 1814.
- Innovations in boat hull and steam propulsion design occurred in the Mon River valley where extremely shallow water forced

builders to redesign boats for such conditions. In its heyday, the lower Mon valley produced boats considered superior for inland waterway navigation throughout the Ohio, Mississippi, and Missouri Rivers. Monongahela boat yards built steamers that set the standard for other inland waterway boat yards to imitate.

- The early Mon River navigation facilities represent the first financially successful river navigation improvements in the U.S.
- Steam powered towing of barges on the Mon River was an innovation that lead to

expansion of the bulk commercial trade of products like coal and iron.

- Through WW I, more commercial tonnage moved through the navigation locks on the Mon River than went through the Panama Canal or moved on the Ohio River.
- During WWI and WW II, the Mon River was considered a vital transportation corridor for the war efforts. This was mainly due to the coal, coke, iron, and steel produced in the Mon Valley and transported on the river.



Steamboat on Monongahela River, Lock 3, 1907

Technical Study of Locks and Dams Construction Documents Changes in Technology of Mon River Navigation Improvements

The basic concept of a lock and dam system has not changed much in the last 300 years. Inland river locks and dams resemble earlier canal system technology. The canal systems built in this country in the early 19th century used the same kind of lock system to raise and lower canal boats as the lock and dam system later built on the inland waterways.

Although the lock and dam system has used the same concept over the last few centuries, significant improvements and changes have been made in materials, design, technology, and size. Locks and dams are subject to a remarkable amount of wear and tear that occurs under daily conditions, along with less frequent damage from runaway boats and barges, and occasional ice and flood conditions. As locks

and dams are repaired, renovated, or replaced, there is an opportunity to use the latest technological design advances to better meet the needs of local river commerce. Such changes in lock and dam design over a period of time can be observed in the Mon River Navigation System whose current operational components date from 1905.

In our effort to document these technological changes, we contracted with John Milner and Associates (JMA) of Philadelphia, Pennsylvania, to undertake research and prepare a written report presenting detailed descriptions of the engineered characteristics of past and present Monongahela River locks and dams. Doug McVarish of JMA compiled the report from written documents, engineering drawings and field views, and describes each of the eighteen historic and nine operating Mon River navigation facilities. It also compares the Mon River system to other river navigation systems.

This detailed and comprehensive technical study is part of our effort under Section 106 of the National Historic Preservation Act to evaluate the engineering significance of the navigation system for National Register nomination. Some interesting facts have emerged from the study.

Although the Pennsylvania Legislature passed an act as early as 1817 to incorporate a company to improve navigation on the Monongahela, followed by surveys by the Commonwealth in 1828 and by the Federal government in 1833, Congress refused to pay for the improvements. The Monongahela

Navigation Company, a private corporation, was successfully incorporated in 1836, and completed the first two slack water locks and dams at Pittsburgh and Braddock in 1841.

The demands of commerce on the Mon River required rebuilding or replacement of older Pennsylvania portions of the navigation system. This occurred even as additional locks were being built by the federal government between 1875 and 1905 to extend navigation to Fairmont, West Virginia.

As the volume of tonnage navigating the Mon River increased and linked-barge towage became the choice for coal transport, the size of the locks and the time required for lockages became outdated. For comparison, the very first locks completed on the Mon River in 1841 had chambers 50 feet wide by 190 feet long while the Grays Landing Lock and Dam completed in 1996 has a lock chamber measuring 84 feet by 720 feet.

Lock and dam technology has its own set of nomenclature. For instance, a variety of lock filling and emptying valves have been used in the Mon system, with such names as horizontal and vertical butterfly, Stoney, cylindrical, and Tainter. Various elements included in each lock and dam complex are named aprons, stilling basins, baffles, guidewalls, guardwalls, bulkheads, bulkhead hoists, Tainter gates, etc. All are described in the glossary, pictured in the appended photos, and diagrammed in sections of the Milner report.

Locktender and Damtender Residence Study Receives National Award

Our office has recently completed the thematic survey of residences built for and owned by the Pittsburgh District. Hardlines Design Company of Columbus, Ohio, undertook this study of houses built for federal employees working as locktenders at navigation facilities or damtenders at flood control facilities. Residences for the Monongahela River navigation facilities are included in this thematic study.

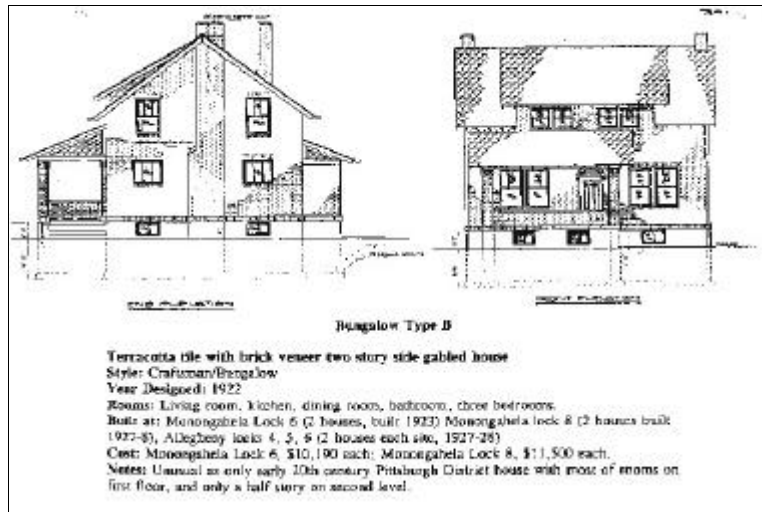
The Monongahela River Navigation System is the oldest within the Pittsburgh District and,

therefore, has the oldest surviving houses. From the beginning of the Corps' improvement of the Mon River System in the 1870s, the practice was to build two detached single-family homes to house the lockmaster and the lockman/engineer. Thus someone was always on duty to assure the operation of the lock system. The practice continued at most lock and dam sites from 1879 until the Pittsburgh District built the last lockkeeper house in 1939-40. A variety of house styles were represented in these buildings, usually reflecting the influence of private house styles of the time period.

Simple wood-framed, gable-roofed houses were built at Lock 9 in 1893. Elaborate Queen Anne Victorian frame homes with both a riverward and landward façade and the first indoor bathrooms were built at Lock 10 at Morgantown in 1903. In 1907 locktender houses were erected of red brick in the foursquare, hip-roofed style with kitchen and bath conveniences at Lock 3 in Allegheny County. Tudor-revival style, two-story, brick and stucco-veneered houses were built at Lock 1 near Pittsburgh in 1916. Craftsman style bungalows were constructed in the early 20th century at the following District facilities: stucco-covered bungalows with large

front porches under gabled roofs at Lock 4 at Charleroi in 1917; two-story brick bungalows with interior glass-paneled French doors on the first floor at Lock 6 at Rices Landing in 1923; and similar craftsman bungalows at Locks 7 and 8 in Greene County in 1927 at the end of lockkeeper house construction on the Monongahela River system.

The Vernacular Architecture Forum awarded our study the Paul E. Buchanan Award for excellence in field studies at their annual conference in Duluth, Minnesota in June 2000.



Archaeological Site Discovered at Leetsdale Casting Facility Location

The District is employing an innovative “in-the-wet” construction technique for building the new Braddock Dam. The base of the dam will be constructed in two large segments at a remote fabrication site at Leetsdale Industrial Park along the Ohio River. The largest segment, a 10,800-ton concrete and steel hollow shell the size of a football field, will be launched and floated from the Leetsdale casting basin to the new site just upriver from the existing Dam 2 next spring. The

second, smaller segment weighing 8,600 tons will follow several months later. Each segment, once fixed into position above the new foundation, will be flooded and sunk into place on pre-set pilings. The fabrication site occupies about 30 acres of land at Leetsdale Industrial Park, located along the Ohio River about 15 miles downriver from Pittsburgh and about 26 river miles from the new dam site at Braddock.



To comply with Section 106 of the National Historic Preservation Act, a Phase I archaeological investigation was undertaken to locate and identify any cultural resources that may be present in the Leetsdale fabrication area. The investigations also made a preliminary evaluation of resources identified, according to criteria for listing on the National Register of Historic Places.

A stratified archaeological site was identified during these archaeological investigations undertaken by our construction contractor at Leetsdale. Additional Phase I and II investigations at Leetsdale revealed cultural occupations ranging from the Archaic period of 5,600 B.C. through the Historic period.

The site has been designated 36AL480. The Pennsylvania Bureau for Historic Preservation and the District have concurred that the site is eligible for the National Register under Criterion D for its potential to provide significant information regarding our understanding of the history and prehistory of the upper Ohio Valley region. The historic component of the site overlays portions of the prehistoric site and preliminary investigations indicate it contains kilns and brickworks associated with the Harmonist Society who resided at nearby

Economy (Old Economy Village). Preliminary indications for the prehistoric component show a number of encapsulated occupations vertically and horizontally across the site that appear to include Middle and Late Archaic along with a later Woodland component.

Following identification of the site and further archaeological studies, we consulted with the Pennsylvania Bureau for Historic Preservation and established a work plan that will allow construction of the dam to advance on schedule but will reserve strategic areas of the archaeological site for Phase III data recovery. We are now finalizing the data recovery plan and schedule for consultation with the Advisory Council on Historic Preservation. Our studies to date have included: a geomorphologic site assessment necessitated by the complexity of the site landform, a 3 meter by 3 meter Phase II excavation, a spatial analysis/sampling report, a lithics air screening study, bulk soils dating, and radiocarbon dating submissions. Although no burials or associated funerary objects have been found so far at 36AL480, we have received inquiries from the federally recognized Delaware Tribe of Western Oklahoma and will continue to consult with them through the data recovery efforts.

More About the Historic Harmony Brick Works

The historic industrial component of archaeological site 36AL480 is a brick works dating from the mid-19th century to the early 20th century, associated with the Harmonist Society. The Harmonists purchased this brick works in the later part of the 19th century. The Harmonists were originally comprised of German religious separatists who came to America seeking religious freedom. They formed a communal society and were known for their piety and industrial prosperity. The group settled in nearby Economy, Pennsylvania, in 1825, which was their third and final home. The Commonwealth of Pennsylvania currently owns part of the Harmony Society's former property located in the nearby town of Economy (Old Economy Village). Old Economy Village is an historic site maintained by the Pennsylvania Historical and Museum Commission.

Phase I and II studies identified intact structural remains of five kiln foundations and three other former structures. Many of the structural foundation remnants and activity areas within the core of the industrial site possess good

integrity. These historic remains have the potential to yield significant information on the architecture, technology, and economics of a brick plant from the mid-19th century to the early 20th century. Documentary research located a surveyor's map of the brickwork operations.



Archaeological remains of a brick kiln flue.

You Can Help

We are currently seeking input from the public for the Harmony Brickworks component of 36AL480. If you can provide old photographs of the brickworks, know of any family members who worked there, or have related information, please contact Conrad Weiser at (412) 395-7220 or e-mail conrad.e.weiser@usace.army.mil.

Monongahela River Navigation System Eligible for the National Register

The Monongahela River Navigation System has been determined eligible for the National Register of Historic Places. We are currently preparing a Multiple Property Documentation Form for the system and Individual Nomination Forms for Locks and Dams 2 and 4. Other locks and dams nominations may follow. Tygart Dam, near Grafton, West Virginia, is already listed on

the National Register and is part of a small national group of U.S. Army Corps of Engineers and Bureau of Reclamation dams that are being considered for designation as National Historic Landmarks. Tygart Dam was authorized to augment low water flow of the Monongahela River, but also is operated for flood control.

Historic American Engineering Record (HAER) Studies Now in Progress

We are now in the process of having the Monongahela River Navigation System properly documented as a significant historic resource. Historic American Engineering Record (HAER) archival quality, large-format photographs and architectural line drawings of Locks and Dams 2, 3, 4, 7, and the Charleoi Boatyard will be part of this documentation. HAER recordation of Lock and Dam 7 is complete. Recordation of the

others is in progress. Architectural drawings are being generated for each lock and dam or former lock and dam in the navigation system. A written history of these locks and dams, including the system's context, is also being developed. When documentation is complete, all aspects of this unique series of engineering resources will have been recorded for future research in the Library of Congress.

More Discoveries on the Lower Mon



While dredging in the Mon River behind Dam 2 in preparation for the new dam foundation, our construction contractor recovered a set of old lock gates from the 1905 lock and dam facility. They were apparently disposed of in the river at some unknown date. These old gates were transported by barge and offloaded at a disposal facility where we took detailed photographs and measurements.

Their discovery and our recordation procedures were carefully coordinated with the Pennsylvania Bureau for Historic Preservation and the Advisory Council on Historic Preservation. We also asked various large museums and historical societies if they would have an interest in preserving the gates, but no one expressed an interest due to their large size and deteriorated condition.



From this same area of the river, our dredging operations pulled up an old intact barrel from the Fayette Brewing Company, Uniontown, PA. The Fayette Brewing Company operated from 1900 until 1920 (Prohibition).

The barrel was brought into our office where we kept it stabilized until arrangements could be made to have it picked up by representatives from the Pennsylvania State Museum at Harrisburg. They will preserve the waterlogged barrel from deteriorating as it dries out and place it in their historic barrel collection. According to John Zwierzyna, Curator at The Pennsylvania State Museum, this barrel is the only pre-prohibition era beer barrel in the State Museum's collection.

Other Interesting Notes and Highlights

Our Office recently conducted studies to examine potential underwater cultural remains in Pool 3 of the Mon River System (Elizabeth to Charleroi). During fieldwork, we examined numerous locations for possible submerged river resources such as barge or boat remains. These locations had been identified in our

previous study utilizing remote sensing - side-scan sonar and magnetometer technology. No, the mysterious B25 bomber was not found! But we did find three 19th century wooden barges or vessels for hauling coal. Our dredging and disposal operations in the pool will not affect these sunken vessels.

Our contract archaeologists and geomorphologists are conducting a landform assessment of terraces along Pools 2 and 3 and in areas where future pool changes may affect shoreline resources. The assessment, now in draft report form, identifies areas that may have potential for intact buried prehistoric or historic

archaeological sites. The study will provide us with crucial information in addressing our Section 106 requirements under the National Historic Preservation Act to identify, evaluate, and mitigate cultural resources prior to pool change impact.

Engineering studies and consultation with the new owner of the Conrail Port Perry Bridge (Norfolk Southern Railroad) continue. We have previously performed an historical study of the bridge through the National Park Service Historic American Engineering Record program.

Section 106 consultation with the Pennsylvania Bureau for Historic Preservation is waiting on the results of our engineering studies and discussions with the Norfolk Southern Railroad.

Our contractor, Greenhorne & O'Mara, Inc. of Greenbelt, Maryland, recently performed cultural resources studies for the lands slated for new access and construction support at Locks 4 and

at our Victory Hollow fill placement site river offloading area. No archaeological or historic sites were identified in these areas.

How can you help?

You may have a particular interest in the resources or the areas we are studying. If you do, we encourage your inquiries and comments. We are continually seeking old photographs and documents on early navigation history along the Monongahela River. If you have any materials we may view and possibly copy, please let us know. We would like to publish an illustrated history of the Monongahela River Navigation System in the near future.

Questions on Mon River cultural resources or the compliance process may be directed to Mr. Conrad Weiser at 412-395-7220. Questions on the Lower Mon Project may be directed to Mr. Hank Edwardo at 412-395-7374. General questions on the Pittsburgh District mission and activities may be directed to Mr. Richard Dowling, Public Affairs Office, at 412-395-7501.

We are on the Web at www.lrp.usace.army.mil. Our Lower Mon Project including *live webcam* is on the web at www.lrp.usace.army.mil/lmon/intro.htm.

**U.S. Army Corps of Engineers
1000 Liberty Avenue
Pittsburgh, PA 15222-4186**

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